

REMARKS

Claims 19-41 are all the claims pending in the application, with new claim 42 having been added.

Claims 19, 40 and 41 have been amended for enhancing the distinction over the prior art. New claim 42, depending from claim 23, has been added. New claim 42 is based on the specification, e.g., at lines 31-34 of page 6. Minor linguistic amendments have been made to claims 19, 21, 39, 40 and 41.

Submitted herewith is a set of formal drawings based on the drawings originally filed, but redrawn so as to avoid solid black shading and to present numbers and reference characters more clearly. Some labels have been added, based on the specification. The amended drawings are believed to address the objections of the examiner.

It is noted that the examiner objects to the drawings for lack of showing of the processor being divided into a plurality of channels, referring to related sections in claim 24 and in the specification. Claim 24 describes the processor as individually processing each of the bandpass filtered derivatives, but does not describe the processor as itself being divided into a plurality of channels. The examiner refers to a section of the specification as describing the processor as being divided into a plurality of channels, but this is the specification, not the claims. While the language of claim 24 would be broad enough to cover the specific implementation referred to in the passage cited by the examiner, it does not specifically require the division, and it is therefore submitted that the wording in claim 24 is consistent with the drawings. In claim 24, the processor is referred to as a single item, there is no mentioning of the processor being divided into channels.

The examiner rejects claims 19, 20, 21, 22, 23, 27, 28, 31 and 40 as being anticipated by Fletcher et al. (US 4,049,930). This rejection is respectfully traversed.

Fletcher discloses a malfunction detection system for testing the electrical signal processing circuit of a hearing aid. A timed switching circuit periodically interrupts the signal processing by the electrical circuit to be tested for a fixed test time interval. During the test time interval, a test signal of constant frequency is applied to the circuit to be tested at the point where the signal processing was interrupted. At some later stage in the circuit to be tested, an output signal is obtained in the form of a processed reproduction of the applied test signal.

The processed test signal is compared to the original test signal in a difference detector. If the processed test signal differs from the reference signal in amplitude and/or frequency beyond preset limits, a triggering signal is generated and transmitted to a warning system. During each test interval, a tone is generated in the ear piece by the processed test signal from the hearing aid amplifier.

Claim 19 already distinguished over Fletcher by reciting the probe as connected to a selected first point in a signal path of the hearing aid extending through said input transducer, said signal processor and said output transducer, and activation means for operator activation in order to cause said test manager to initiate a test procedure.

The connection of the probe to a selected point in the signal path permits focussing the test on selected items of the hearing aid. Successive tests with the probe connected at different points permit a detailed testing of many parts of the hearing aid.

The activation means permits an operator, e.g. the wearer or an audiologist, to activate a testing procedure whenever appropriate. The wearer is not bothered by the hearing aid automatically entering a test mode when he does not want it to.

Fletcher does not teach this subject matter of claim 19 or its advantages, and the invention defined in claim 19 is therefore neither shown nor suggested in Fletcher.

The claims 20, 21, 22, 23, 27, 28 and 31 through their dependencies all include the limitations of claim 19 and therefore patentably distinguish over Fletcher. Further discussion of these claims is not necessary at this point, but there are several points where the examiner's interpretations appear to signify some basic misunderstanding, and the following clarifying comments are therefore provided.

The examiner finds claim 20 anticipated by Fletcher. Claim 20 says that the test manager is adapted to disconnect said input transducer from the signal path and to activate said probe means for determination of the signal parameter in order that the noise level generated by input circuitry of the hearing aid may be determined. Fletcher uses a timed switching circuit to periodically interrupt the signal processing by the electrical circuit to be tested for a fixed test time interval. During the test time interval, a test signal of constant frequency is applied to the circuit to be tested at the point where the signal processing was interrupted. Fletcher does not show determination of the noise level generated by input circuitry of the hearing aid.

The examiner objects to claim 28 for being anticipated by Fletcher. Claim 28 says that the test manager is adapted to verify the gain of said signal processor as a function of frequency. Fletcher inputs a constant frequency tone (the test signal) into the hearing aid amplifier, and

compares the test signal as processed by the hearing aid amplifier to a reference signal with respect to amplitude and frequency. Fletcher does not show verification of the gain as a function of frequency.

The examiner objects to claim 31, explaining that Fletcher discloses that the actual physical construction of the malfunction detection may take any practical form. Claim 31 says that the activation means comprises a switch positioned at a housing of the hearing aid. The crucial point seems to be the understanding of the term "activation means". In the subject application, the activation means is a means by which an operator may launch a test procedure.

Claim 40 as now amended distinguishes over Fletcher by reciting -means for connecting said probe to a selected first point in a signal path of the hearing aid extending through said input transducer, said signal processor and said output transducer, and a test signal generator adapted for injecting a test signal at a selected second point in the signal path of the hearing aid, - activation means for operator activation in order to cause said test manager to initiate a test procedure. The test signal generator adapted for injecting a test signal at a selected second point in the signal path of the hearing aid permits the activation of selected parts of the hearing aid. Successive injections of the test signal at different selected points permit a detailed mapping of the performance of parts of the hearing aid, providing the data for drawing a more comprehensive picture.

Claim 40 distinguishes over the prior art in the same manner as claim 19 discussed above.

The examiner rejects claims 29, 32-39 as being unpatentable over Fletcher et al. (US 4,049,930) in view of Lindemann et al. (US 6,118,877). This rejection is respectfully traversed.

Lindemann, relates to diagnostic testing in the sense of presenting to the user a selection of real world sounds. Nothing in Lindemann relates to self testing of the hearing aid as such, and nothing suggests how the teachings of this reference could be combined with the teachings of Fletcher.

Claims 29 and 32-39 include through their dependencies all limitations of claim 19 and therefore patentably distinguish Fletcher and Lindemann.

Claim 29 further says that the test manager is adapted to verify the compression of said signal processor. None of the prior art shows this feature, either alone or in combination with the features of the parent claim.

With regard to claims 32-34, the examiner points to a mention in Lindemann of an input that receives tones for diagnostic tests from an external source. However, diagnostic testing is entirely different from testing the hearing aid as in the subject application.

Regarding claim 36, the examiner again refers to Lindemann. Claim 36 states that the hearing aid comprises means for causing generation by said output transducer of a tone signal to alert the user that the hearing aid has a defect. We find nothing in Lindemann regarding alerting the user about a defect in the hearing aid.

Also regarding claim 37, the examiner refers to Lindemann as a basis for finding obviousness, saying that the user would be alerted about a defect. It is submitted that there is no basis for this assertion. Claim 37 says that the user will be alerted by a specific tone signal to signify a specific defect. This provides an internal analysis to decide about the kind of defect,

and the alerting of the user by specific clear information, relieving him or her of having to decide whether there is a defect or not, and to decide about the type of defect.

Claims 24, 25, 30 and 41 are rejected as being unpatentable over Fletcher et al. (US 4,049,930) in view of Kaulberg (US 2002/0057814 A1). This rejection is respectfully traversed.

Claims 24, 25 and 30 through their dependencies all include the limitations of claim 19 and therefore patentably distinguish Fletcher and Kaulberg.

Kaulberg relates to a hearing aid with an adaptive filter for suppression of feedback. Nothing in Kaulberg relates to self testing of the hearing aid, and nothing suggests how the teachings of this reference could be combined with the teachings of Fletcher.

The examiner admits that Fletcher does not point to a filter bank with bandpass filters. The examiner refers to Kaulberg for a teaching of a hearing aid where an electrical signal is divided into a set of bandpass filtered electrical signals, and added together to provide a second electrical signal into an acoustic output.

Claim 41 as now amended distinguishes Fletcher through the recitation of a filter bank with bandpass filters for deriving from the first electrical signal a set of bandpass filtered derivatives of the first electrical signal, a signal processor for individual processing of each of the bandpass filtered derivatives of the first electrical signal and adding together the processed electrical signals to provide a second electrical signal based on the first electrical signal, a probe adapted for being selectively connected to the outputs of each one of said bandpass filters for determining a respective signal parameter, a test signal generator adapted for injecting a test signal at a selected point in the signal path of the hearing aid extending through said input

Amendment
USSN 09/899,991

transducer, said signal processor and said output transducer, and activation means for operator activation in order to cause said test manager to initiate a test procedure.

Claim 41 also distinguishes Kaulberg for the reasons given above in the explanations relating to the claims 19 and 40.

The examiner rejects claim 26 as being unpatentable over Fletcher et al. (US 4,049,930) in view of Lindemann et al. (US 6,118,877) and further in view of Svajda et al. (US 2002/0039428 A1). This rejection is also respectfully traversed.

Claim 26 through its dependency includes the limitations of claim 19 and therefore patentably distinguishes over Fletcher. Svajda discloses a hearing aid including a microphone as well as a telecoil adapted for picking up a magnetic field.

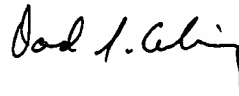
However, claim 26 further stipulates that at least one input transducer is a telecoil input transducer, and that the output transducer is adapted to generate a magnetic field, that is picked up by said telecoil. Svajda does not point to the output transducer being adapted to generate a magnetic field, that is picked up by said telecoil. Indeed, applicants have not been able to locate such teaching in any of the references at all, and this feature is novel and non-obvious over all of the prior art of record.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment
USSN 09/899,991

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

David J. Cushing
Registration No. 28,703

WASHINGTON OFFICE



23373

PATENT TRADEMARK OFFICE

Date: May 21, 2003